

Car Dealership Management System

Introduction to Database Systems - (DBS211)

Milestone 1 – Project Idea and Proposal

Group 3

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Introduction:

The automotive industry, particularly car dealerships, requires efficient management of vehicle inventory, customer information, and service records. Our involvement with the automotive sector has highlighted the need for an integrated system to streamline operations and enhance customer service. Therefore, our group has chosen to design a database for a car dealership management system.

Problem statement:

Car dealerships need a centralized database to manage vehicle inventory, track sales transactions, and maintain service records to improve operational efficiency and customer service.

Solution:

Our team will develop a database to support a car dealership management application. This system will enable the dealership to manage its inventory, track sales and service records, and generate insightful business reports.

Requirements

1. User Login/Registration:
 - Secure user authentication.
 - Role-based access control.
2. Vehicle Inventory Management:
 - Vehicle details (make, model, year, VIN, color, price).
 - Vehicle status (available, sold, under maintenance).
3. Customer Management:
 - Customer profiles (contact information, purchase history, service history).
4. Sales Management:
 - Sales transactions (vehicle sold, sales date, sales representative, price, payment method).
5. Service Records:
 - Service appointments and history (vehicle, customer, service details, date, cost).

6. Reporting:

- Inventory reports (current inventory, sold vehicles).
- Sales reports (monthly sales, sales by representative).
- Customer reports (demographics, purchase history).
- Service reports (service activity, revenue from services).

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Milestone 2 – Project ERD and Data Dictionary

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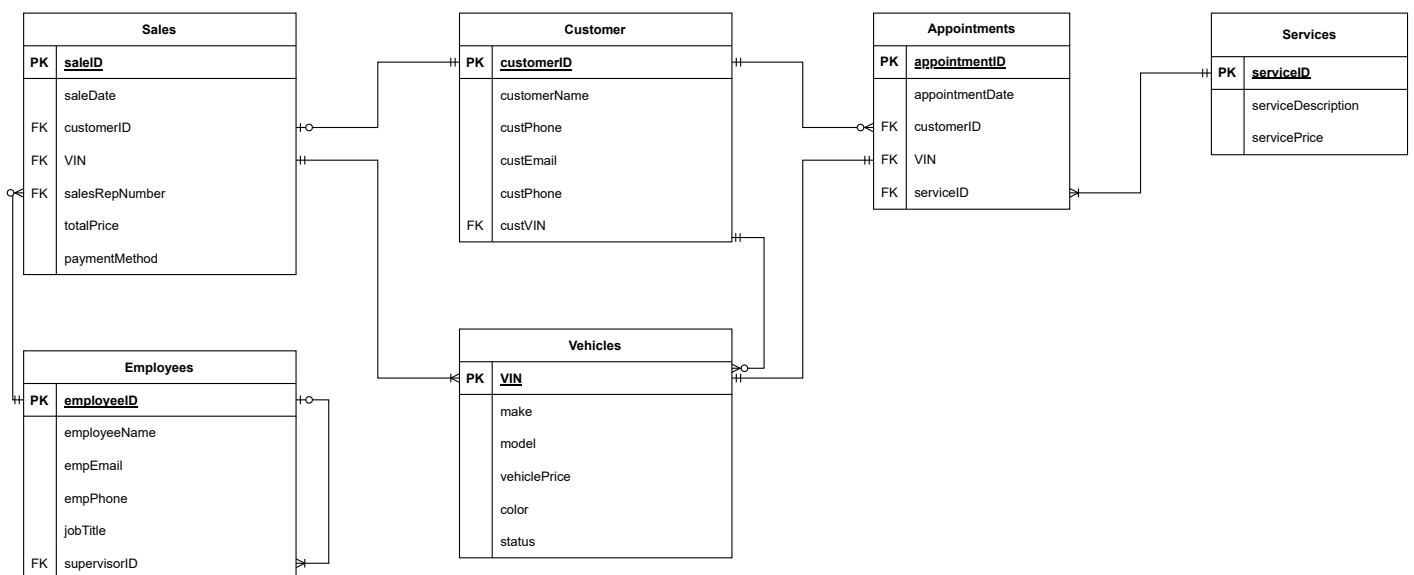


TABLE: Sales

Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
saleID	NUMBER	4		PK	Y	1-9999	1234	Autonumbered identity
saleDate	DATE				Y		2024/07/01	Sale Date (YYYY/MM/DD)
customerID	NUMBER	4		FK	Y	1-9999	5678	Foreign key from customer
VIN	STRING	17		FK	Y		1HGCM82633A123456	Foreign key from vehicle
salesRepNumber	NUMBER	4		FK	Y	1-9999	7890	Foreign key from employees
totalPrice	NUMBER	9,2	0.0		Y	0.00 – 1000000.00	34565.75	Total price in monetary value
paymentMethod	STRING	20			Y		“Credit Card”	Payment method used

TABLE: Employees

Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
employeeID	NUMBER	4		PK	Y	1-9999	1234	Autonumbered identity
employeeName	STRING	50			Y		“John Doe”	Full name of the employee
empEmail	STRING	50			Y		“john.doe@example.com”	Email of the employee
empPhone	NUMBER	11			Y	20000000000-99999999999	9055551212	Phone number assuming North America format
jobTitle	STRING	30			Y		“Sales Representative”	Job title of the employee
supervisorID	NUMBER	4		FK	N	1-9999	4321	Foreign key from employees

TABLE: **Vehicle**

Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
VIN	STRING	17		PK	Y		1HGCM82633A123456	Vehicle Identification Number (VIN)
make	STRING	30			Y		“Honda”	Manufacturer of the vehicle
model	STRING	30			Y		“Civic”	Model of the vehicle
vehiclePrice	NUMBER	9,2	0.00		Y	0.00 – 1000000.00	25000.00	Price of the vehicle
color	STRING	20			Y		“Black”	Color of the vehicle
status	STRING	20			Y		“Available”	Status of the vehicle

TABLE: **Customer**

Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
customerID	NUMBER	4		PK	Y	1-9999	5684	Autonumbered identity
customerName	STRING	50			Y		“Alice Johnson”	Full name of the customer
custPhone	NUMBER	11			Y	20000000000-99999999999	9055551212	Phone number of the customer
custEmail	STRING	50			Y		“jane.doe@example.com”	Email of the customer
custVin	STRING	17		FK	N		1HGCM82633A123456	Foreign key from Vehicle

TABLE: Customer Service

Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
served	NUMBER	4		PK	Y	1-9999	2234	Autonumbered identity
serviceDescription	STRING	255			Y		“Oil change”	Description of the service
servicePrice	NUMBER	9,2	0.00		Y	0.00 – 10000.00	49.99	Price of the service
customerID	NUMBER	4		FK	Y	1-9999	5678	Foreign key from Customer
VIN	STRING	17		FK	Y		1HGCM82633A123456	Foreign key from vehicle

TABLE: Appointments

Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
appointmentID	NUMBER	4		PK	Y	1-9999	5684	Autonumbered identity
appointmentDate	DATE				Y		2024/07/24	Appointment Date (YYYY/MM/DD)
customerID	NUMBER	4		FK	Y	1-9999	5142	Foreign key from customer
VIN	STRING	17		FK	Y		1HGCM82633A123456	Foreign key from Vehicle
served	NUMBER	4		FK	Y	1-9999	2345	Foreign key from customer service

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Milestone 3 – Project Script & Final ERD

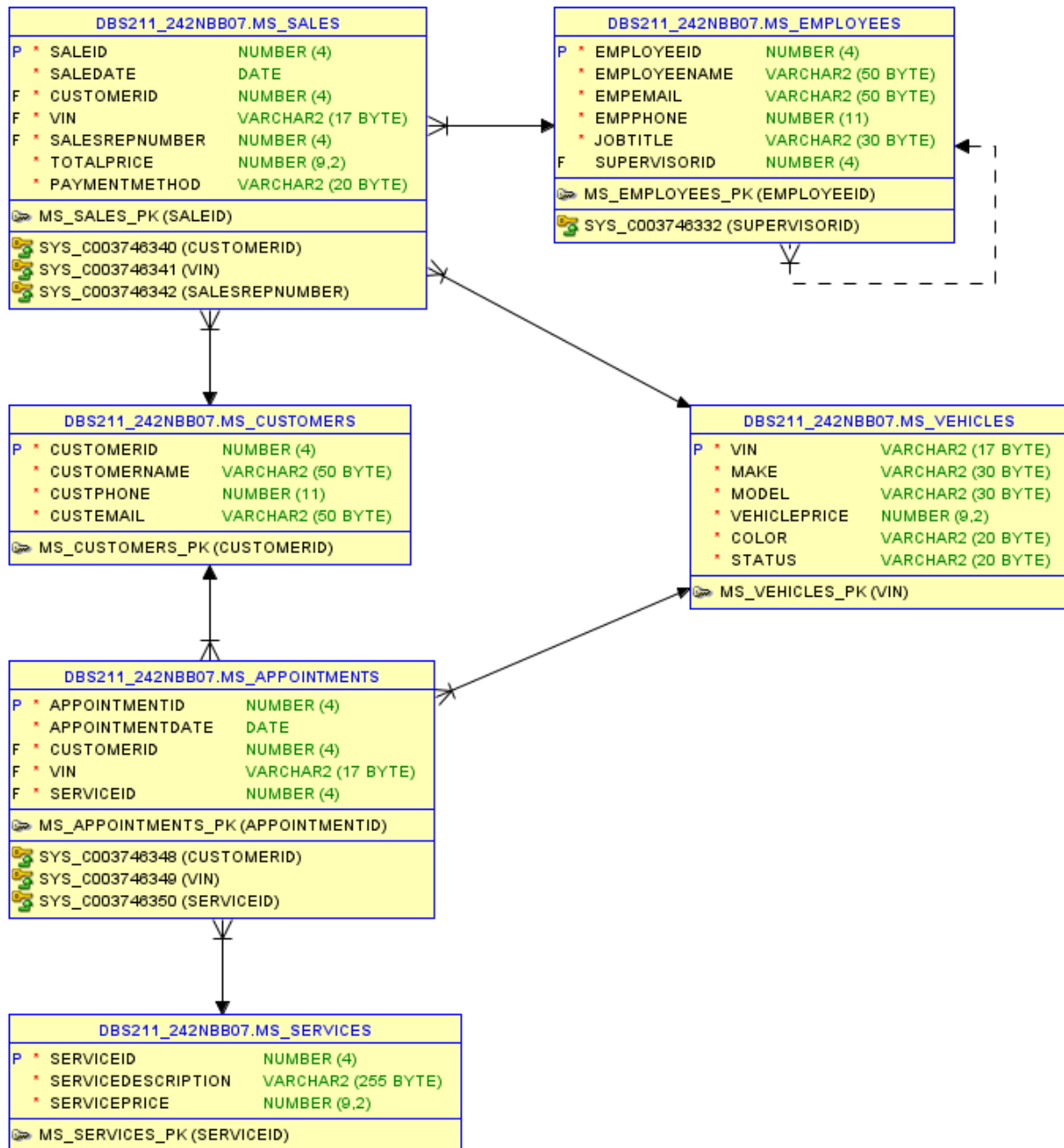
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August 2, 2024

Final ER Diagram:



** to make the table creation between our group members possible we temporarily added "MS_" before the name for the demonstration of the final ER diagram. The names of tables remain without a prefix in the .sql document and table definition **

Business Rules:

A car dealership contains many vehicles. Each vehicle can be sold to a customer. A customer can purchase multiple vehicles, but each vehicle can be sold to only one customer.

The dealership employs many sales representatives. Each sales representative can handle multiple sales, but a sale is handled by only one sales representative. Sales representatives work for the dealership and do not belong to any specific department.

Customers can schedule service appointments for their vehicles. A customer can have multiple appointments, but an appointment is for only one customer. A vehicle can be serviced in multiple appointments, but each appointment is for only one vehicle.

The dealership offers many services. Each service can be part of many appointments, but an appointment involves only one service.

Employees of the dealership can have supervisors. A supervisor can supervise multiple employees, but each employee has only one supervisor.

Overall, the dealership maintains comprehensive records of all sales, customers, employees, vehicles, appointments, and services to ensure efficient operations and excellent customer service.

Creation Script, Sample Data Script and Business Report Script are all documented in a single SQL file attached with the submission folder of Milestone 3 names **Milestone3.sql**